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Basic Imagery Interpretation Report

NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

25X1

KRASNOARMEYSK SOLID MOTOR DEVELOPMENT FACILITY

25X1A

STRATEGIC WEAPONS INDUSTRIAL FACILITIES

USSR

JANUARY 1970

COPY NO. 119

12 PAGES

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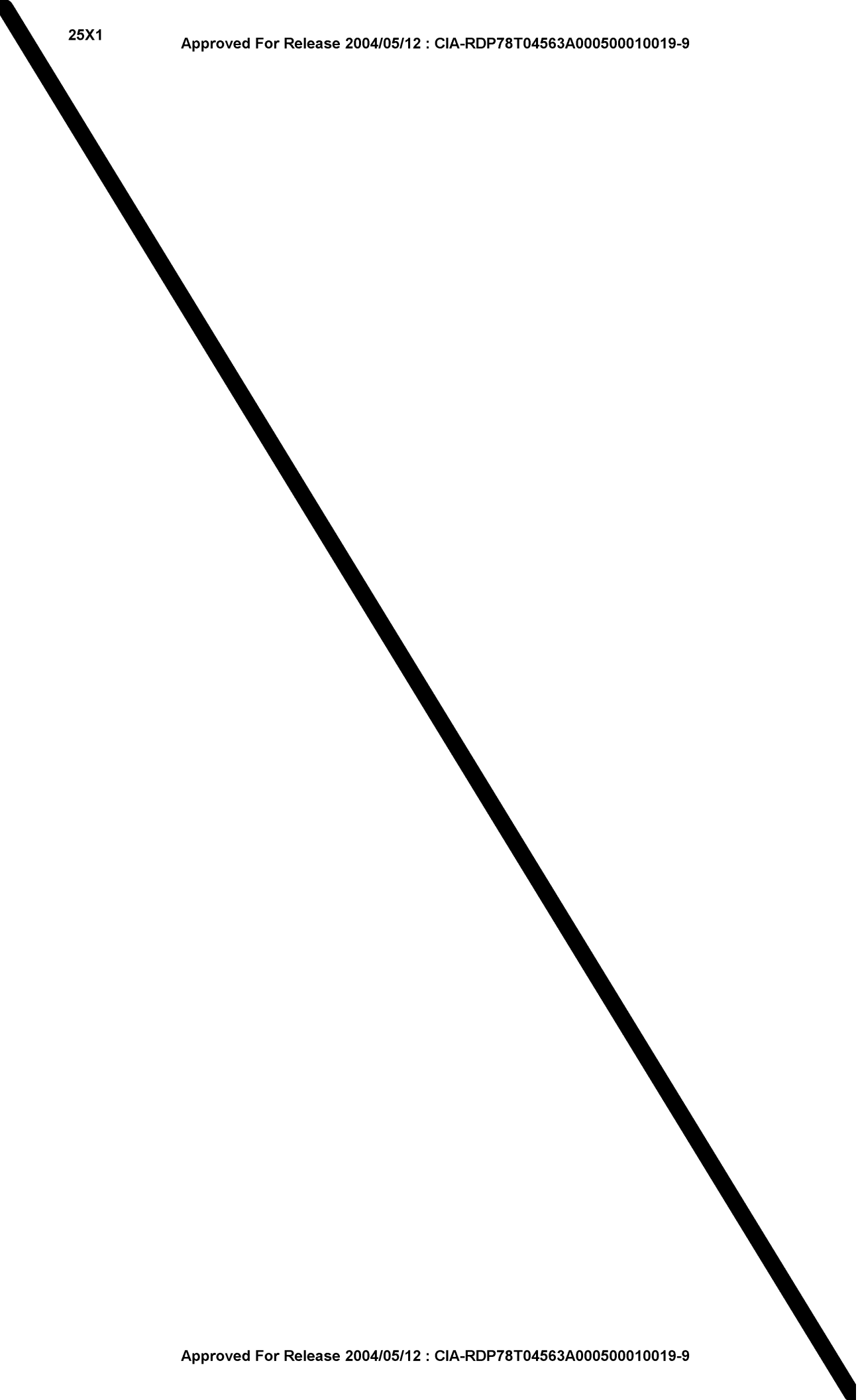
Approved For Release 2004/05/12 : CIA-RDP78T04563A000500010019-9



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INSTALLATION OR ACTIVITY NAME	COUNTRY
Krasnoarmeysk Solid Motor Development Facility	UR

25X1A

UTM COORDINATES	GEOGRAPHIC COORDINATES
NA	56-09-15N 038-10-40E

25X1 MAP REFERENCE
ACIC. US Air Target Chart, Series 200, Sheet M0154-23HL, 3d ed, May 67, scale 1:200,000
25X1C (SECRET/[redacted]

LATEST IMAGERY USED	NEGATION DATE (if required)
25X1D [redacted]	NA

ABSTRACT

The Krasnoarmeysk Solid Motor Development Facility, which is involved in weapons/munitions development, is composed of nine general areas: the Sofrino Experimental Firing Range; design bureau 3 with its associated probable rocket motor plant and aerodynamics laboratory; a rocket motor test facility; a probable munitions static test area; a munitions fragmentation test area; a possible munitions penetration test area; a probable munitions loading and storage area; a rocket sled test area which is under construction; and the design bureau 3 test range. Within the facility, 12 different rocket-motor test positions have been identified.

This report updates the previous NPIC report of December 1967 on the Krasnoarmeysk* facility. Included in this report are a location map, a photograph which is keyed to the designations of the general areas of the facility, and line drawings of the more significant areas of the facility with tabulated mensural data, functional identifications of individual structures, and an update in the chronological development of the facility. The
25X1D information in this report is current through [redacted]

INTRODUCTION

The Krasnoarmeysk Solid Motor Development Facility was established at the site of the previously existing Sofrino Experimental Firing Range to exploit the scientific
25X1C knowledge of the [redacted] shows a fragmentation test cell at the Sofrino Experimental Test Range which proves that one of the present functions of the facility is an expansion of a long-standing program. The facility was known to the [redacted] as
25X1C design bureau 3. The facility is in a densely wooded area approximately 28 nautical miles (nm) [52 kilometers (km)] northeast of Moscow (Figure 1). The facility has a roof cover of 103,800 square meters (1,117,303.2 square feet) and it covers an area approximately 20 by 6 km (12 by 3.5 nm) extending northeast from the rangehead which is adjacent to the city of Krasnoarmeysk.

The chronological development of the Krasnoarmeysk Solid Motor Development
25X1D Facility prior to [redacted] is in the previous NPIC report on the facility.[2]

BASIC DESCRIPTION

The facility is composed of nine general functional areas (Figure 2).

Area A - Sofrino Experimental Firing Range
Area B - Design bureau 3 with associated areas
Area C - Rocket motor test facility
Area D - Probable munitions static test facility
Area E - Munitions fragmentation test area
Area F - Possible munitions penetration test area
Area G - Probable munitions loading and storage area
Area H - Rocket sled test area
Area I - Design bureau 3 range impact area

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*The name of this facility has been previously associated with the communities of Putilogo and Sofrino.

Area A

Area A (Figure 3) contains the rangehead area of the Sofrino Experimental Firing Range as well as some of the munitions and rocket motor test facilities.

The rangehead area appears to be actively engaged in the testing of small rocket motors and frangible munitions. The area also probably functions as a support area for the rest of the facility. Areas A, D, E, and F may be part of the old Sofrino Experimental Firing Range organization which was originally a separate organization from design bureau 3.

Area B

Design bureau 3 with associated areas (Area B) includes a probable rocket motor production plant, an aerodynamics laboratory area, the original design bureau 3 test area, a possible small-arms firing range, the firing area of the design bureau 3 test range, and a rocket motor test area (Figure 4).

The appearance of the design bureau 3 area suggests that many of the early objectives have been continued and the design bureau has been tasked with additional objectives. The probable solid propellant rocket motor production plant in Area B (Figure 4) is associated with three probable finishing and assembly buildings in or near the rocket motor test facility in Area C (Figure 5).

No evidence of the production or handling of composite modified double-base propellant ingredients is observed. The possiblity that double-base propellants, nitroglycerine, high explosives, and other ingredients may be brought in to make the composite modified double-base propellants cannot be completely discounted. It is more likely, however, that a composite propellant formulation is used. Although the buildings cannot be compared exactly, analogous structures for all of the key structures have been identified previously in the other Soviet probable composite propellant rocket motor production plants.

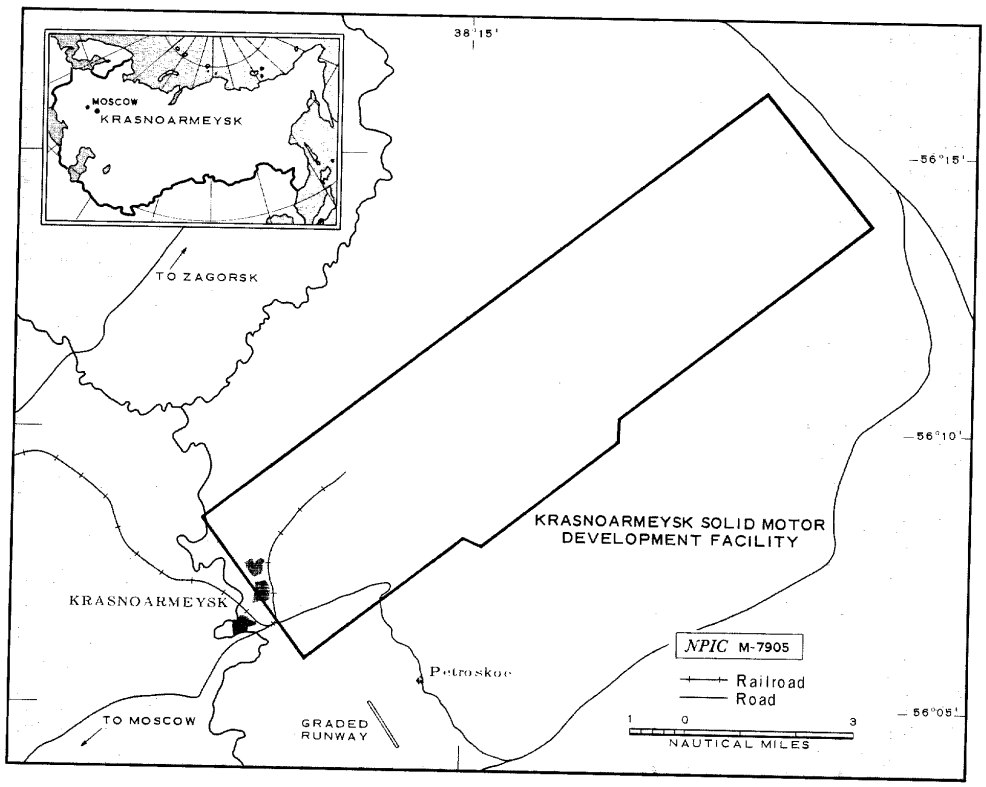

FIGURE 1. LOCATION OF KRASNOARMEYSK SOLID MOTOR DEVELOPMENT FACILITY, USSR

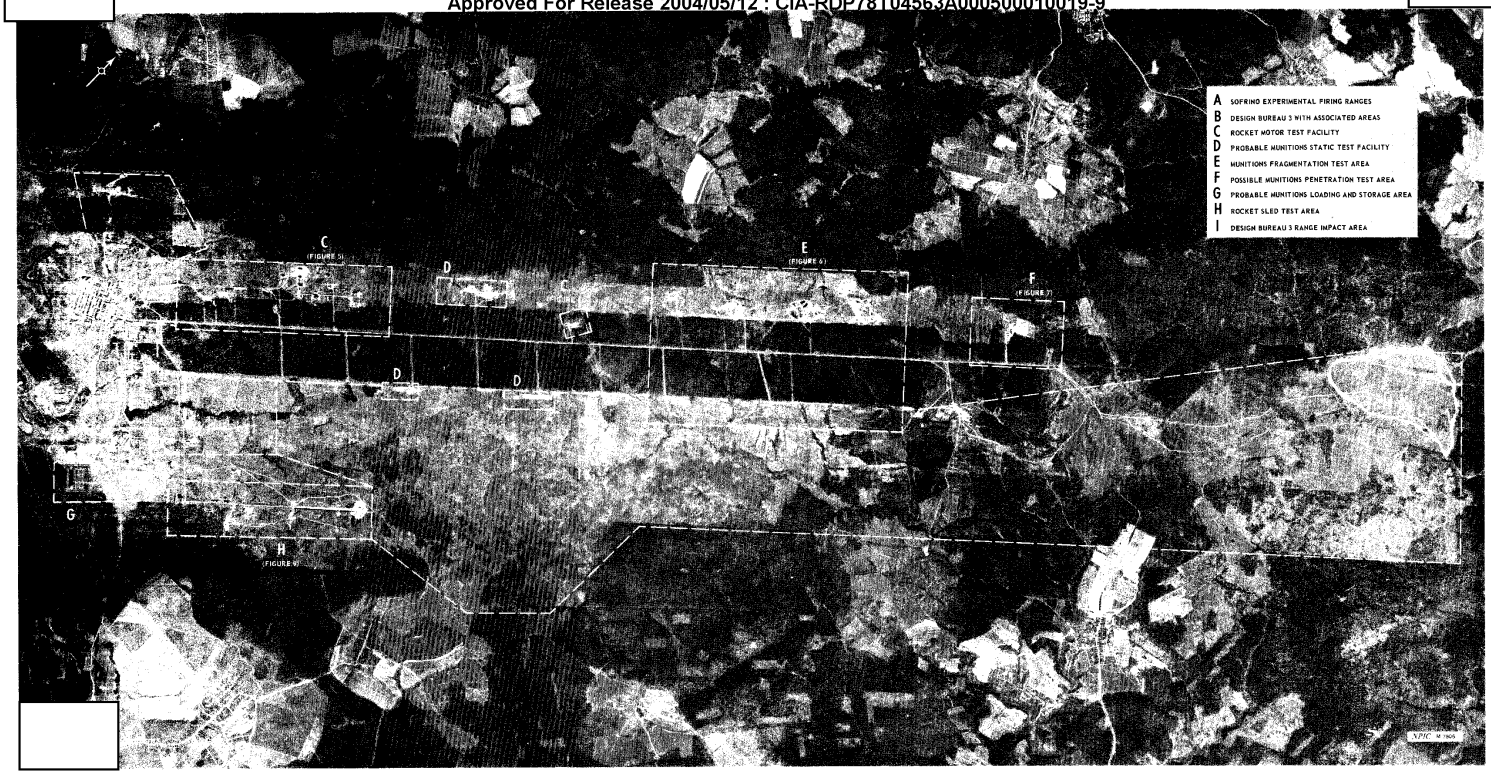

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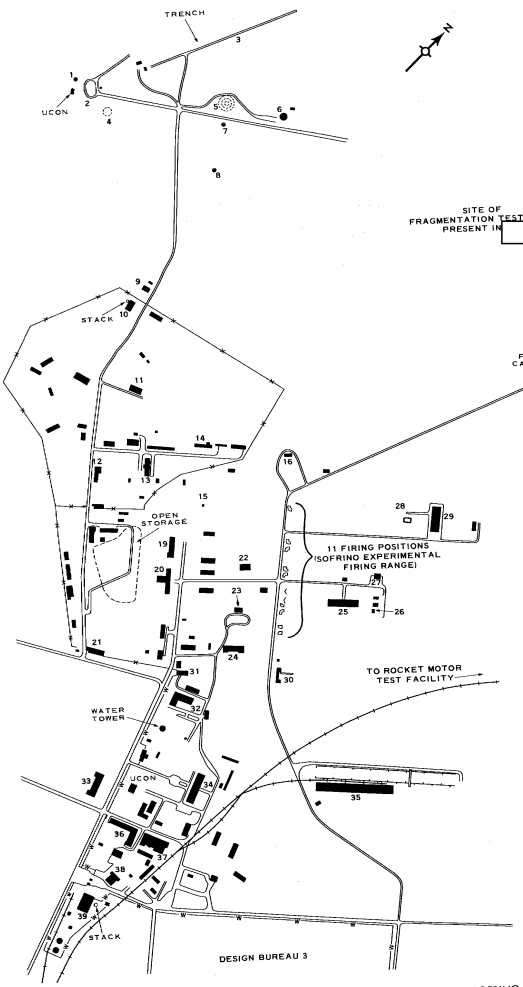
FIGURE 2. KRASNOARMEYSK SOLID MOTOR DEVELOPMENT FACILITY

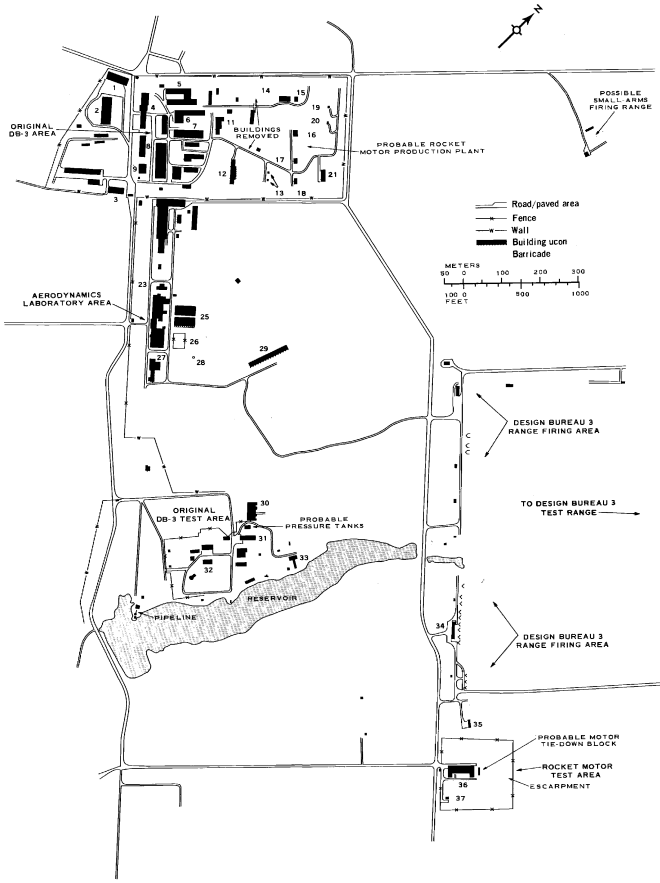
25X1D



ITEM	DESCRIPTION	REMARKS
1	Fragmentation test cell	For munitions testing.
2	Control bunker	For munitions testing.
3	Possible shell test range	For munitions testing.
4	Probable controlled fragmentation test array (cell)	For munitions testing.
5	Probable controlled fragmentation test array (cell)	For munitions testing.
6	Fragmentation test cell	For munitions testing.
7	Fragmentation test cell	For munitions testing.
8	Fragmentation test cell	For munitions testing.
9	Fuel tanks (4)	Serve the steam plant (Item 10).
10	Steam plant	[redacted]
11	Warehouse	Barricaded.
12	Shop & assembly bldg	Barricaded.
13	Shop bldg	[redacted]
14	Warehouse	
15	Explosives & munitions storage bldg	
16	Test bldg	
17	Control bldg	Possible Fragmentation Test Area to the NW was present in [redacted]
18	Horizontal test cell	Barricaded for rocket motor testing. A possible test observation bldg is on NW side.
19	Shop bldg	[redacted] high center bay.
20	Shop & assembly bldg	[redacted] high.
21	Warehouse	
22	Admin bldg	
23	Explosives & munitions storage bldg	Barricaded. For rocket motor testing. Two test support bldgs are also in the barricade.
24	Admin & engineering bldg	
25	Probable assembly & checkout bldg	[redacted]
26	Horizontal test cell	
27	Shop bldg	
28	Storage bunker	
29	Probable assembly & checkout bldg	[redacted]
30	Probable test bldg	
31	Admin bldg	Identified by [redacted] as headquarters bldg for Sofrino Experimental Firing Range.
32	Warehouse	Four stories high.
33	Admin bldg	Ucon [redacted] complete
34	Admin & engineering bldg	Probable vehicle maintenance & repair shop.
35	Transshipment bldg	[redacted]
36	Shop bldg	
37	Shop bldg	Approximate roof cover.
38	Shop bldg	Approximate roof cover.
39	Steamplant	
	64 Support bldgs	
	19 warehouses	

*Maximum overall dimension

FIGURE 3. LAYOUT OF SOFRINO EXPERIMENTAL FIRING RANGE WITH ASSOCIATED MUNITIONS AND ROCKET MOTOR TEST FACILITIES (AREA A)



ITEM	DESCRIPTION	REMARKS
1	Shop bldg	[redacted] 25X1D
2	Shop bldg	25X1D
3	Shop bldg	
4	Admin & engineering bldg	
5	Admin & engineering bldg	
6	Laboratory bldg	
7	Bldg ucon	
8	Admin & engineering bldg	
9	Admin & engineering bldg	
10	Shop bldg	
11	Admin & engineering bldg	
12	Laboratory bldg	
13	Storage bldgs (2)	Barricaded. Storage of sensitive materials.
14	Unid processing bldg	Barricaded. Storage of sensitive materials.
15	Control bldg	Associated with item 14.
16	Probable ingredients preparation bl	Barricaded.
17	Probable propellant mixing bldg	Barricaded.
18	Probable propellant mixing bldg	Barricaded.
19	Processing bldg	Barricaded. Storage of sensitive materials.
20	Processing bldg	Barricaded. Storage of sensitive materials.
21	Probable motor casting bldg	Barricaded. Items 12, 13, 16-18, and 21 are probably involved in a pilot program for the production of composite propellant rocket motors.
22	Shop & assembly bldg	[redacted] 25X1D
23	Shop bldg	[redacted] 25X1C
24	Aerodynamic laboratory bldg	Dimensions are approximate.
25	Pressure tanks (28)	[redacted] 25X1D
26	Substation	
27	Shop bldg	
28	Water tower	Bldg may be longer as construction continues on the north end. Construction started by [redacted] 25X1D
29	Bldg ucon	
30	Test bldg	Only one test position indicated by the configuration of the concrete pad.
31	Wind tunnel	Identified by [redacted] as the original wind tunnel built by [redacted] 25X1C 25X1C
32	Steam plant	Stack appears to be ucon. Fuel tank is on south side of plant.
33	Probable test position & support b	May have been an early test area. Possibly has two test positions.
34	Range support bldg	[redacted] 25X1D
35	Control bldg	
36	Assembly & checkout bldg	A probable rocket motor tie-down block is adjacent to the NE side of the bldg and a firing abutment is approximately [redacted] away. 25X1D
37	Storage bldg	Barricaded. Storage of sensitive materials.
	19 Warehouses	Roof cover approximate.
	46 Support bldgs	Roof cover approximate.

*Maximum overall dimension

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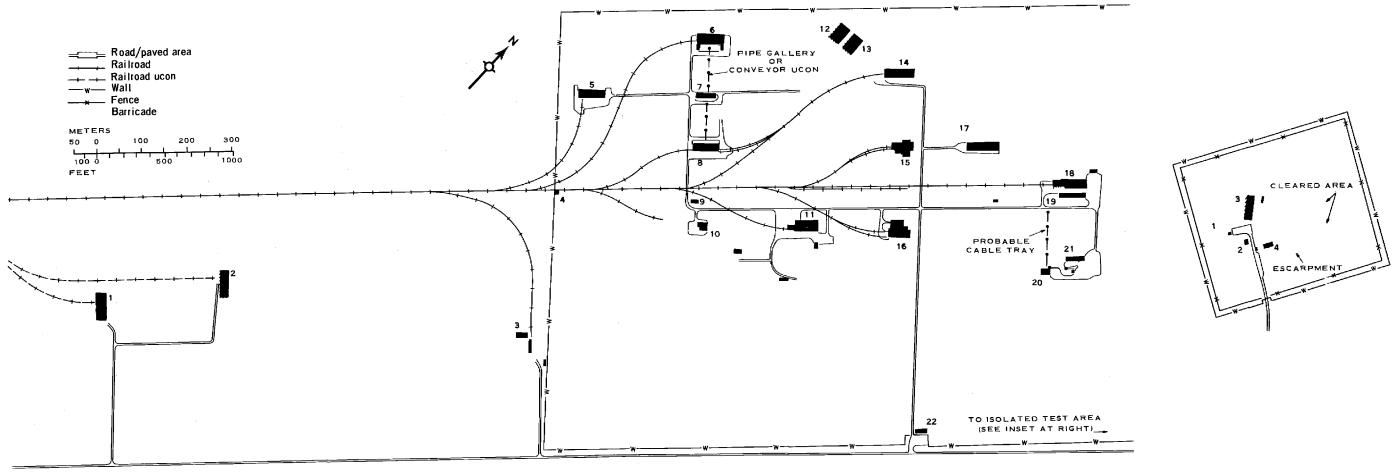
FIGURE 4. LAYOUT OF DESIGN BUREAU 3 (AREA B)



ITEM	DESCRIPTION	REMARKS
1	Probable finishing & assembly bldg	[redacted] Rail served and has lightning arrestor. Two possible converted trailers or missile transporters near SW side of bldg in [redacted]
2	Probable finishing & assembly bldg ucon	[redacted] Rail spur ucon. Bldg ucon on [redacted]
3	Storage bldg	Rail served. Three small buildings are in area. Probably serves as a rail-to-road transfer point.
4	Gate house	---
5	Probable finishing & assembly bldg	[redacted] Rail served and has lightning arrestor.
6	Probable motor processing bldg	Rail served. Ucon [redacted]
7	Probable motor processing bldg	Items 6-8 are interconnected with a large pipe galley or conveyor which were still ucon between items 6 and 7. Bldgs ucon [redacted]
8	Probable motor processing bldg	Rail served. Two rail spurs enter NE end. One rail spur enters SW end.
9	Holding area	Barricaded on two sides. In [redacted] contained 36 possible covered missile transporters and trailers, each [redacted]
10	Steam plant	Rail served. Probable supports for a pipeline extend from SW side of a small support bldg to the SW of the plant.
11	Assembly & checkout bldg	Rail served with a [redacted] high bay.
12	Construction activity	NA
13	Construction activity	NA
14	Motor processing bldg	Rail served.
15	Probable pre- or post-fire inspection bldg.	Served by two rail spurs and has a lightning arrestor.
16	Probable pre- or post-fire inspection bldg.	Served by two rail spurs and has a lightning arrestor. [redacted]
17	Control & instrumentation bldg	Barricaded. Two interior blast walls protrude through the roof.
18	Large horizontal test cell	Rail served and has a lightning arrestor. Operational by [redacted]
19	Test support bldg	Connected to item 18. Dimensions included with those of item 18.
20	Test support bldg	---
21	Horizontal test cell	[redacted] high and has two lightning arrestors. Operational by [redacted]
22	Main gate house 10 support bldgs	---
	Isolated Test Area (Item numbers keyed to Figure 5, inset)	
1	Thrust block	Inside a barricade with two camera or instrumentation positions.
2	Test support bldg	Inside a barricade.
3	Construction site	NA
4	Test position	Present [redacted]

*Maximum overall dimension
**Difference in total roof cover is due to the use of rounded conversion factor.

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FIGURE 5. LAYOUT OF ROCKET MOTOR TEST FACILITY AND ASSOCIATED ISOLATED TEST AREA (AREA C)

A large aerodynamic test building, originally referred to as Institute Tarnovsky,[1] which contains at least two blowdown-type wind tunnels, has been constructed adjacent to the southeast side of the original design bureau 3. That building was under construction in mid-1950.[1]

No firm evidence can be found to link design bureau 3 to the Sofrino Experimental Firing Range organization, or to indicate a change in the organizational structure of either. Photography does show that the major programs which had been charged to each of the organizations have been continued and, in some cases, the programs have been considerably expanded. The expansion of the facilities involved in the testing of munitions and in the production and testing of rocket motors makes it appear that the rocket motor development is continuing to be done by design bureau 3 and the munitions testing is done by the Sofrino Experimental Firing Range as it was when design bureau 3 was established.[1]

Area C

The rocket motor test facility, Area C, bears a resemblance to test facilities at other known Soviet solid propellant rocket motor production plants, particularly to those which are considered to be connected with composite propellants (Figure 5).

The large horizontal test cell (item 18), although smaller than the large horizontal test cell, Test Cell 1, at the Moscow Solid Propellant Research and Development Facility, Lyubertsy[3] and smaller than the larger part of the dual position horizontal test cell at the Kemerovo Rocket Motor Test Facility,[4] appears to be more like those test cells than any other known Soviet test cells. The large crane which serves the rear of each of these cells is the most obvious common feature.

Another horizontal test cell (item 21), although slightly smaller, is comparable to the smaller part of the dual-position test cell at Kemerovo.

A high-bay assembly and checkout building (item 11), similar to those in the rocket motor test facilities associated with probable composite propellant rocket motor production plants at Perm, Pavlograd, Kemerovo, and Kamensk-Shakhtinskiy, USSR, is also present and two probable pre- or post-fire checkout buildings (items 15 and 16) are evident.[4]

A major departure is observed in the arrangement of the probable finishing and assembly buildings from that observed at other Soviet rocket motor production and test facilities. One probable finishing and assembly building (item 5) is within the secured area, and one complete probable finishing and assembly building (item 1), along with another which is under construction (item 2), is outside and to the southwest of the secured area. These buildings appear to be part of the production flow of the probable propellant plant. Three probable motor processing buildings (items 6-8), two of which are rail served, are connected by a pipe gallery or conveyor, one side of which is still under construction, between two of these buildings (items 7 and 8). This configuration is foreign to the pattern of structures usually observed in Soviet rocket motor test facilities.

An ell-shaped earthen barricade appears to shield a holding area (item 9) for possible test articles. [redacted] trailers or containers on dollies were present, with two similar objects near the complete probable finishing and assembly building (item 1) which is outside the secured area and southwest of the test facility. 25X1D

An isolated test area (Figure 5, inset) is northeast of and associated with the rocket motor test facility. The isolated test area contains two test positions. The thrust block (item 1) for the larger of the two test positions is within the U-shaped barricade and the smaller test position (item 4) appears to be designed to fire into an excavation which is parallel to the east side of the larger test position.

Area D

Area D consists of three cleared areas near the midpoint of the ranges (Figure 2). The larger cleared area is on the north side of the wooded region dividing the two ranges. A tower, approximately [redacted] high, a bunkered possible control building, a tower-like object, and several support structures are present in the cleared area on the 25X1D

north side of the wooded region. Several earthen barricades appear to be newly completed, or are still under construction, and extensive ground scarring is evident in the area. The area is considered to be a probable munitions static test facility.5 No evidence of testing activity other than ground scarring is evident in the two areas on the south side of the wooded region. Probable range instrumentation buildings are on the south side of the wooded region. It is more likely that these structures near the static test areas are range instrumentation buildings rather than being associated with the static test facility.

Area E

Area E is primarily in the impact area for the Sofrino Experimental Firing Range and includes four groups of weapons and munitions test cells (Figure 6).

25X1D The area appears to be primarily devoted to the testing of frangible munitions. The presence of derelict vehicles and aircraft, first observed in [redacted] as well as components of both suggests that effects testing of munitions is also of concern.

Area F

A possible munitions penetration test area, Area F, is newly identified near the northeastern end of the wooded region (Figure 7). The area consists of two parallel concrete surfaces, one of which serves as a firing line (item 6). The impact abutments are placed on the other surface (item 7). A gantry crane (item 8) serves the second concrete surface. Three barricaded test support buildings (items 1-3) and a paved area (item 4) are also observed.

Area G

A probable munitions loading and storage area, Area G, is on the south side of the rangehead (Figure 8). The area consists of 13 barricaded explosives and munitions storage buildings (items 1-9, and 21-24), an administration and security building (item 10), an administration building (item 13), a probable munitions loading building (item 18), a probable inert components preparation building (item 19), a shop building (item 17), a probably abandoned church (item 20), and two support buildings. The area is likely to be the specialized munitions loading area for articles which are tested in the fragmentation and static test areas.

Area H

The rocket sled test track, Area H, is parallel to the firing ranges on the southeast side of the wooded region (Figure 9). The track extends northeast from a road serving the firing lines. Completed track is evident for approximately 1,665 meters (5,460 feet) and, past that, a canal for a probable water brake approximately 1,070 meters (3,510 feet) long is under construction. Structures in the vicinity include a control building (item 1), a probable instrumentation bunker (item 8), a personnel bunker (item 9), one additional support building, and four other support buildings under construction.

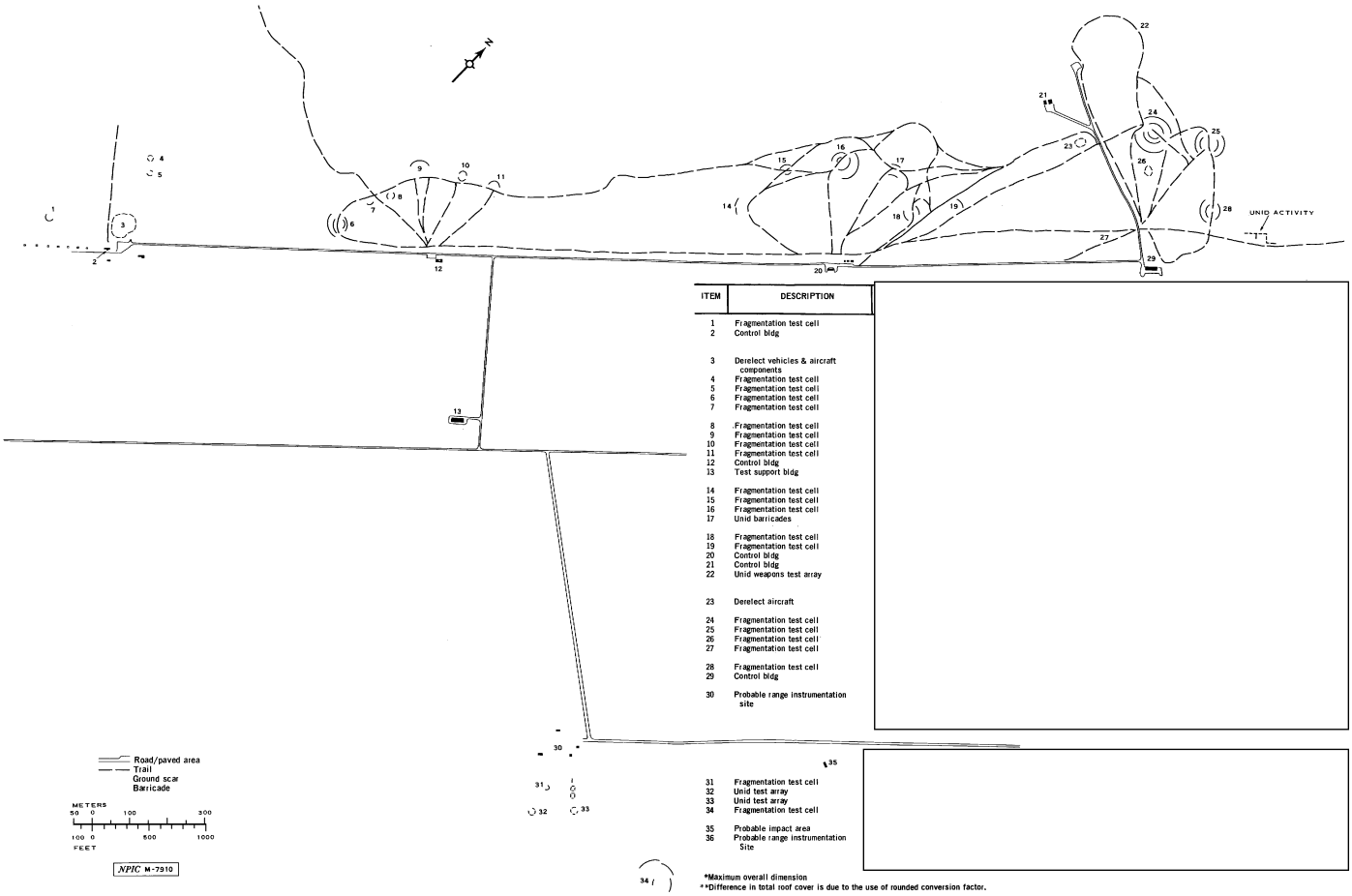
Area I

The impact area of the design bureau 3 range, Area I, shows evidence of previous test activity. However, there is no evidence on current photography to confirm or deny any recent use of the range.

Although the downrange part of the Sofrino Experimental Firing Range has been converted to the testing of frangible munitions, the design bureau 3 range is relatively intact. The ground scarring suggests that it is used to test rockets, frangible warheads for rockets, or artillery weapons.

Production and Test Activity

Design bureau 3 is apparently engaged in the design, at least production on a pilot scale, and testing of rocket motors.



ITEM	DESCRIPTION
1	Fragmentation test cell
2	Control bldg
3	Derelect vehicles & aircraft components
4	Fragmentation test cell
5	Fragmentation test cell
6	Fragmentation test cell
7	Fragmentation test cell
8	Fragmentation test cell
9	Fragmentation test cell
10	Fragmentation test cell
11	Fragmentation test cell
12	Control bldg
13	Test support bldg
14	Fragmentation test cell
15	Fragmentation test cell
16	Fragmentation test cell
17	Unid barricades
18	Fragmentation test cell
19	Fragmentation test cell
20	Control bldg
21	Control bldg
22	Unid weapons test array
23	Derelect aircraft
24	Fragmentation test cell
25	Fragmentation test cell
26	Fragmentation test cell
27	Fragmentation test cell
28	Fragmentation test cell
29	Control bldg
30	Probable range instrumentation site
31	Fragmentation test cell
32	Unid test array
33	Unid test array
34	Fragmentation test cell
35	Probable impact area
36	Probable range instrumentation Site

[redacted] 25X1D

[redacted] 25X1D

*Maximum overall dimension
**Difference in total roof cover is due to the use of rounded conversion factor.

FIGURE 6. LAYOUT OF SOFRINO EXPERIMENTAL FIRING RANGE IMPACT AREA AND MUNITIONS FRAGMENTATION TEST AREA (AREA E)

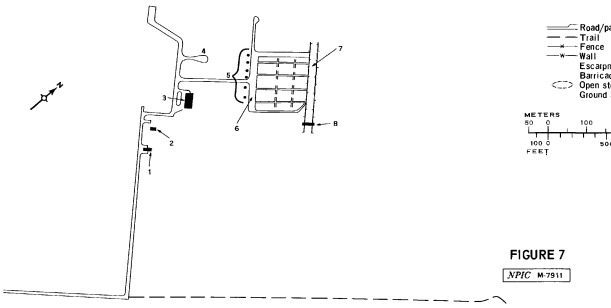
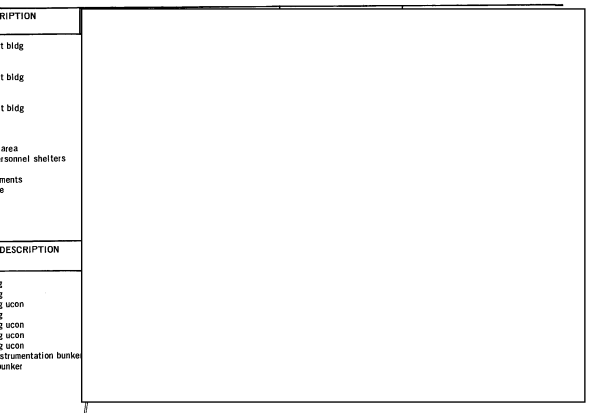


FIGURE 7
NPIC M-7911

ITEM	DESCRIPTION
1	Test support bldg
2	Test support bldg
3	Test support bldg
4	Unid paved area
5	Probable personnel shelters
6	Firing line
7	Impact abutments
8	Gantry crane

ITEM	DESCRIPTION
1	Control bldg
2	Support bldg
3	Support bldg ucon
4	Support bldg
5	Support bldg ucon
6	Support bldg ucon
7	Support bldg ucon
8	Probable instrumentation bunker
9	Personnel bunker



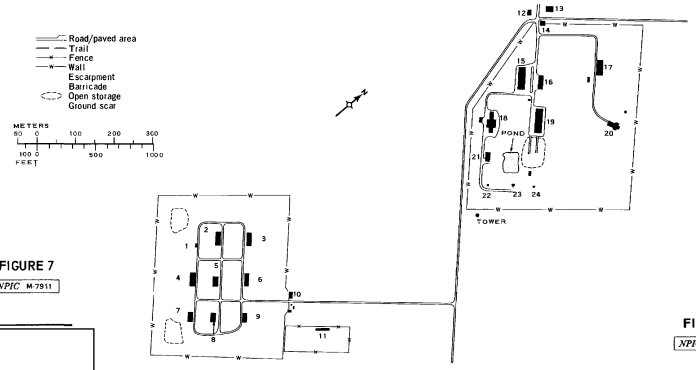


FIGURE 8
NPIC M-7912

ITEM	DESCRIPTION	REMARKS
1	Explosives & munitions storage bldg	Barricaded
2-4	Explosives & munitions storage bldg	Barricaded
5	Explosives & munitions storage bldg	Barricaded
6	Explosives & munitions storage bldg	Barricaded
7-9	Explosives & munitions storage bldg	
10	Administration & security bldg	
11	Support bldg	
12	Support bldg	
13	Administration bldg	Approximate dimensions
14	Guard post	Ucon
15	Bldg ucon	
16	Support bldg	
17	Shop bldg	
18	Probable munitions loading bldg	
19	Probable inert components preparation bldg	Measurements exclude covered walkway. Has an open storage yard on SE side
20	Probably abandoned church	Roof cover excludes apse and bell tower
21	Explosives & munitions storage bldg	Barricaded
22	Explosives & munitions storage bldg	Barricaded
23	Explosives & munitions storage bldg	Barricaded
24	Explosives & munitions storage bldg	Barricaded. Dimensions approximate

*Maximum overall dimension.

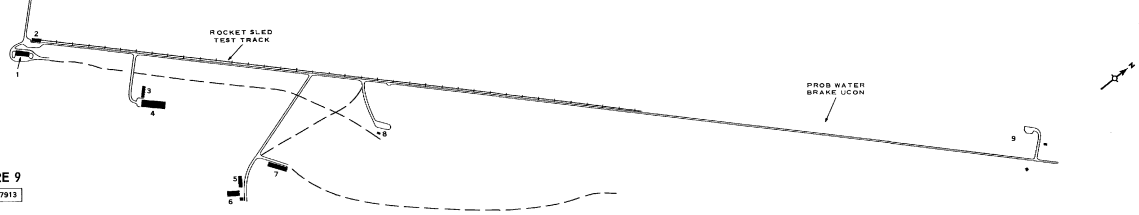


FIGURE 9
NPIC M-7913

FIGURE 7. LAYOUT OF POSSIBLE MUNITIONS PENETRATION TEST AREA (AREA F); FIGURE 8. LAYOUT OF PROBABLE MUNITIONS LOADING AND STORAGE AREA (AREA G); FIGURE 9. LAYOUT OF ROCKET SLED TEST AREA (AREA H)

It is unlikely that the Sofrino Experimental Firing Range is still used as an artillery range since most of the range area is occupied with fragmentation and other types of munitions testing apparatus. Some fragmentation testing was evident, in addition to the
25X1D range testing [redacted] but the large number of fragmentation test cells in Area E, the unidentified test array in Area E (Figure 6, item 22), and the new probable penetration testing area in Area F with the probable controlled fragmentation test arrays in Area A (Figure 3, items 4 and 5) near the rangehead suggest that the function has changed from the simple acceptance testing of gun barrels and weapons. Some of the testing activity now appears to be more sophisticated and more involved with effects than delivery and is probably involved in the testing of armor piercing munitions, controlled fragmentation munitions, antiaircraft warheads, fragmentation testing of conventional munitions, and the testing of warheads for rockets. However, acceptance testing of munitions may still be part of the function.

ESSENTIAL SERVICES

The facility is rail served and is connected by all-weather roads to the adjacent community of Krasnoarmeysk. Krasnoarmeysk airfield, a 2,103-meter (6,900-foot) graded-earth airstrip, is approximately 3 nm to the southeast.

Water is obtained from a reservoir near the original design bureau 3 test area (Figure 4). Electric power, probably supplied from a local source, is distributed through the sub-station near the aerodynamics laboratory building.

SECURITY

No special security arrangements are evident. However, the rangehead areas are either fenced or walled. Areas of hazardous operations such as the Sofrino Experimental Firing Range rangehead, the probable rocket motor production plant, the rocket motor test facility and isolated test area, the original design bureau 3 test area, and the explosives and munitions loading and storage area are separately secured.

REFERENCES

[redacted]

25X1D

MAPS OR CHARTS

ACIC. US Air Target Chart 200, Sheet M0154-23HL, 3d ed, May 67, scale 1:200,000 (SECRET) [redacted] 25X1

25X1C [redacted]

DOCUMENTS

1. CIA. CRS/USSR Division, Industrial Plant File 0044289, *Krasnoarmeysk Solid Motor Development Facility (Guided Missile Research Station),* Undated (SECRET)

2. NPIC. [redacted] *Krasnoarmeysk Missile Research and Development Facility, USSR,* Dec 67 (TOP SECRET [redacted]) 25X1 25X1

3. NPIC. [redacted] RCA-09/0025/69, *Moscow Solid Propellant R & D Facility, Lyubertsy, USSR,* Feb 69 (TOP SECRET [redacted]) 25X1 25X1

4. NPIC. [redacted] *Comparison of Rocket Motor Test Facilities Associated with Major Rocket Motor Production Facilities in the USSR,* Feb 69 (TOP SECRET [redacted]) 25X1 25X1

5. NPIC. [redacted] *Munitions Test Activity, Krasnoarmeysk, USSR,* Nov 68 (TOP SECRET [redacted]) 25X1 25X1

6. Army. Headquarters Materiel Command. AMCR 385-224, *AMC Safety Manual,* Jun 64 (UNCLASSIFIED)

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